

Notes on *Polygonaceae* in Japan and its Adjacent Regions (II)

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Persicaria japonica and its allied species are reclassified recognizing two species. *P. odorata* is adopted for the correct name for plants hitherto called *P. macrantha* or *P. conspicua* in East Asia, the latter two are recognized as subspecies of *P. odorata*. *P. odorata* subsp. *odorata* is reported from South China for the first time. Lectotypes of *Polygonum omerostromum*, *P. pseudojaponicum*, *P. japonicum* var. *conspicuum*, var. *micranthum*, var. *micranthum* f. *brevistylum* are designated.

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Key words: East Asia, *Persicaria japonica*, *Persicaria odorata*, *Polygonaceae*, taxonomy.

9. Taxonomy of *Persicaria japonica* (Meisn.) Nakai ex Ohki and its allies

Persicaria japonica (Meisn.) Nakai ex Ohki is well characterized by the perennial habit with subterranean sympodially branching stolons, densely glandular-dotted leaves, and long pedicels exserted from bracts. Several species closely related to it were proposed from East, Southeast and South Asia, but the taxonomy of the species complex have been extremely confused. Yonekura (2006) recognized two species in this group mainly based on materials in Japanese herbaria as well as field researches in Japan, but carelessly followed Steward (1930) for nomenclature of the recognized taxa, overlooking an earlier name to be used. Here I review the history of taxonomy of the group to make new classification throughout East and Southeast Asia.

Meisner (1856) described *Polygonum japonicum* Meisn. from Japan and *P. macranthum* Meisn. from Northeast India

respectively, distinguishing them from each other by presence/absence of glandular dots on perianth and number of styles. Meisner (1865) subsequently classified Siebold specimens from Japan into one species *P. japonicum*. Nakai (1908) pointed out number of styles were variable within taxa, and recognized one species *P. japonicum* including five varieties within the Japanese and Korean plants based on the size, color and presence / absence of glands of perianth, length of style and fertility of ovary. After one year Nakai (1909) reclassified them into three species, *P. japonicum*, *P. conspicuum* (Nakai) Nakai and *P. sterile* Nakai. In the both works, Nakai delimited *P. japonicum* (s. str.) as having white glandless perianth and fertile flowers with lustrous achenes. Koidzumi (1915) described *Polygonum japonicum* Meisn. var. *glandulosum* Koidz. with glandular dots on the perianth, which resulted the perianth character became useless for delimitation of *P. japonicum* from the other species. Ohki (1925) further



Fig. 1. *Persicaria japonica* var. *japonica*. August 2011 at Wuhan Botanical Garden, Wuhan.

described *P. omerostromum* Ohki and *P. pseudo-japonicum* Ohki from Taiwan mainly based on difference of style characters. Steward (1930) pointed out the difference of style length in this group as well as the closely related *P. barbatum* were due to flower polymorphism including heterostyly (Standord 1925) and not to be used for discriminating taxa. Thus, majority of characters hitherto used for distinguishing taxa were considered as variable. Steward (1930) backed Meisner (1856) recognizing two species *P. macranthum* and *P. japonicum*, distinguished from each other only by presence/absence of glandular dots on perianth, and reduced all the taxa described by Nakai and Ohki into synonymy of the above two species without examining their type materials. Samuelsson (1929) further united them into one species

P. japonicum Meisn. This view was followed by Li (1998, also Li et al. 2003), although he recognized var. *conspicuum* by the difference of texture of achene surface. Recent Japanese taxonomists have been recognized two species *P. japonicum* and *P. conspicuum* (including *P. sterile*) based on color of perianth and texture of achene surface (Ohwi 1953, Kitamura and Murata 1961, Kitagawa 1982).

According to my observation, number of flowers per node of inflorescences is the most useful for distinguishing *P. conspicua* and *P. japonica*, i. e., The former has more than 4 flowers per bract (sometimes fewer in the uppermost nodes) whereas the latter has only two or three flowers per node. The difference is well correlated with the other vegetative and reproductive characters. Moreover, the character



Fig. 2. *Persicaria odorata* subsp. *conspicua* in Hubei Province, China. September 2007 at Zigui.

is easily investigated even on the inflorescences in which flowers are already fallen off by counting number of the pedicels persistent within each inflorescence bract.

Apart from the characters of flowers and fruits, the two species in fully grown condition can be separated from each other vegetatively: *Persicaria japonica* has stems branching above middle, branches bearing several inflorescences and narrowly oblong leaf blades widest at or above middle, while *P. conspicua* has stems branching at or below middle, branches bearing fewer inflorescences, and lanceolate leaf blades widest below middle (Ohwi 1953; also see Figs. 1, 2). These vegetative characters, however, are not always useful especially in plants growing inadequate conditions, as these vary considerably

dependent on environmental factors. Achene character is only useful in fruiting specimens, which are considerably rare because of strong self-incompatibility related to heterostyly (Hiratsuka and Nakao 1996).

It must be noted that flower colour is not always useful as a distinguishing characters between the two taxa, because *Persicaria conspicua* rarely has white-flowered form (Hiyama 1962), and *P. japonica* occasionally has variant with pale pinkish perianth, especially in bud stage (Fig. 1). The pinkish-flowered variant of *P. japonica* seems rare in mainland Japan, but is more frequently encountered in southern Kyushu, Ryukyu Islands, Taiwan and eastern China. Perianth of *P. conspicua* is uniformly pink even in fruit stage, whereas perianth of *P.*

japonica in fruit stage turns pale greenish or, in the pinkish-flowered variant, becomes tinged dull reddish except margin.

Perianth of *Persicaria conspicua* is always glandular-dotted at least in mainland Japan, whereas that of *P. japonica* is glandular and eglandular. Syntypes of *Polygonum japonicum* var. *micranthum* Nakai (= *P. sterile* Nakai), distinguished from *P. japonica* by the presence of glands on perianth (Nakai 1908, 1909), all proved to be belonging to *P. japonica*, while syntypes of var. *micranthum* f. *brevistylum* Nakai were mixture of *P. japonica* and *P. conspicua*. Type specimens of *Polygonum japonicum* var. *salicifolium* Nakai and var. *glandulosum* Koidz., both collected from Westernmost part of Honshu, are vegetatively very similar to each other. The only difference between them is presence of glands. Both varieties can be included in *P. japonica*.

Both *Persicaria conspicua* and *P. japonica* usually have lax-flowered inflorescences because the flowers in each node blooming side by side, and fruits in persistent perianth quickly falling off after matured. Specimens of *P. japonica* collected in late autumn or winter often have dense inflorescence in appearance because more than two flowers in each bract bloom simultaneously. Such plants were recognized as a taxon named *Polygonum pseudo-japonicum* Ohki, but are considered as merely an seasonal variant, not to be recognized at any taxonomical rank *Polygonum japonicum* Meisn. var. *densiflorum* Nakai (1908) from South Korea is somewhat similar to the seasonal variant of *P. japonica* as described above in appearance, but is not considered as such because the holotype collected in October has vegetative habit of typical *P. conspicua* and inflorescence character intermediate between *P. japonica* and *P. conspicua*, viz. 3 to 5 flowers bearing per node of inflorescences, brooming almost simultaneously. Apparently similar plants have been sporadically collected in Honshu and Kyushu, all of which have been found in

September or October, not in winter. Although the most of these specimens (including the type of *P. japonicum* var. *densiflorum*) are sterile as stated by Nakai (1908), one specimen (Hirano s.n., TUS 145816) collected in Miyagi Prefecture has a few achenes, which are morphologically intermediate between *P. japonica* and *P. conspicua*. These specimens might be a hybrid between them, but it is not confirmed genetically yet.

Here I recognize two species within this group in East Asia as has been recognized. Yonekura (2006) adopted *Persicaria macrantha* (= *Polygonum macranthum*) as the correct name for *P. conspicua* following Steward (1930), regarding the latter as a subspecies of the former, because several differences in vegetative part were observed. Soon after the publication of Yonekura (2006), I realized that I had misunderstood the entity of *P. macrantha* by examining specimens from the type locality deposited in L. The plants which I had considered as *P. macrantha* actually proved to be *P. odorata* (Lour.) Soják, whereas the true *P. macrantha* was more robust herbs growing only East India, Myanmar and Southwest China. *Persicaria odorata* was described from Vietnam as *Polygonum odoratum* Lour. (1790), which was earlier than *P. macranthum* Meisn. (1856). Although it is a herb well-known as Vietnamese Coriander in Southeast Asia, its occurrence in East Asia has not been reported. Steward (1930) only recorded it from Indo-China, providing very short diagnosis comparing with *P. hydropiper*, *P. pubescens* and *P. punctata*, but not with *P. japonica* or *P. macrantha*. Meisner (1856) erroneously included it as a group without glands on perianth. After examined many specimens from South China in IBSC, I found specimens of typical *P. odorata* from South China (Fig. 3), which represent the first record of the species from China. Both *P. conspicua* from East Asia and *P. macrantha* from East India can be recognized here as subspecies of *P. odorata*, as these taxa are geographically isolated from

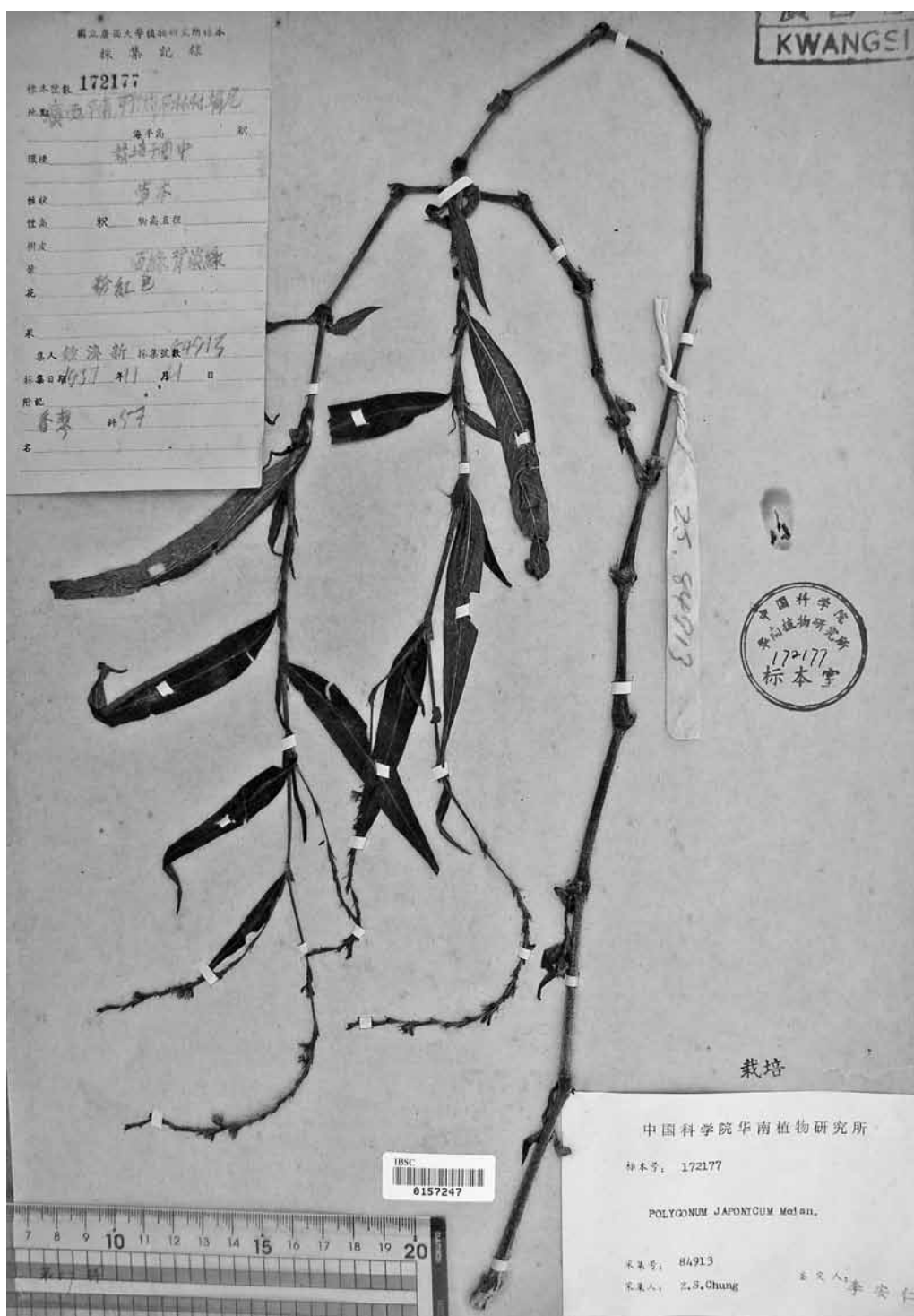


Fig. 3. *Persicaria odorata* (Lour.) Soják subsp. *odorata* collected from Guangxi Autonomous Region, China (Z. S. Chung 84913, IBSC 172177).

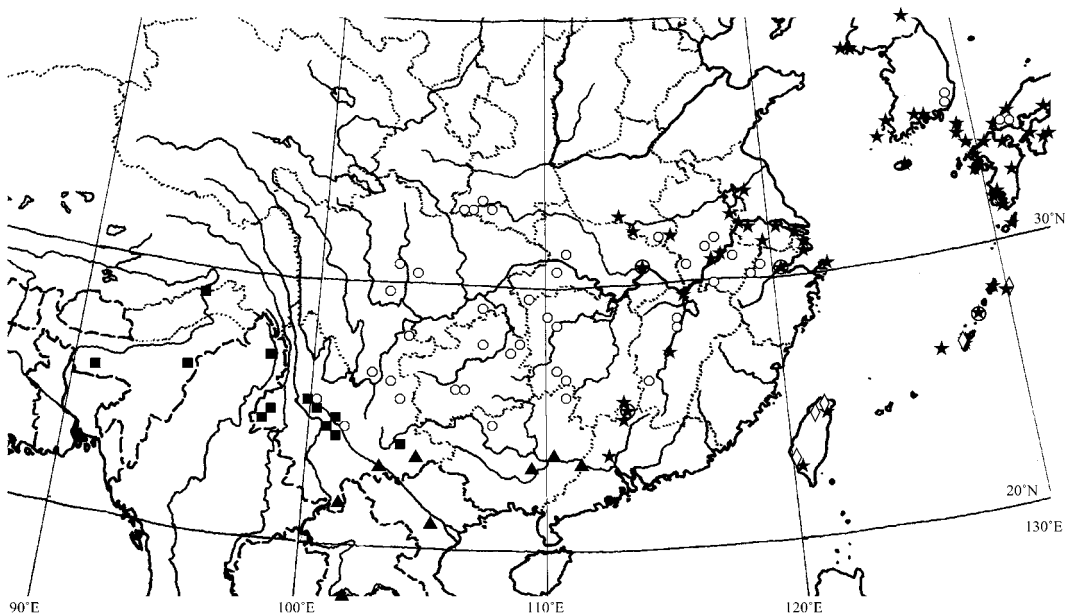


Fig. 4. Distribution of *Persicaria japonica* and *P. odorata* in China and its adjacent regions. Star. *Persicaria japonica* var. *japonica*. Open diamond. *P. japonica* var. *scabrida*. Triangle. *P. odorata* subsp. *odorata*. Solid square. *P. odorata* subsp. *macrantha*. Open circle. *P. odorata* subsp. *conspicua*.

each other as discussed below.

Distribution of *Persicaria japonica* in Mainland China is confined in lowlands in East, Central and Southeast regions (Fig. 4). Li (1998) and Li et al. (2003) recorded the species (as *Polygonum japonicum* var. *japonicum*) from all provinces south from Yangtze Valley, but majority of the records are based on misidentified specimens of *P. odorata*. *Persicaria odorata* subsp. *conspicua* (*Polygonum japonicum* var. *conspicuum*), which had been recorded only from East China (Fujian, Jiangsu, Zhejiang and Anhui Provinces) by Li (1998) and Li et al. (2003), proved to be widely distributed in East, Central and Southwest China. Although I do not examine the type materials, *Polygonum myosurus* Franch. from Sichuan, which had been regarded as a synonym of *P. japonica* (Samuelsson 1929, Steward 1930, Ferguson 1982, Li 1998, Li et al. 2003), may be considered as a synonym of *P. odorata*.

In China, *Persicaria odorata* subsp. *odorata* is at present only known from lowland of

Guangxi Autonomous Region, westernmost part of Guangdong Province and southernmost part of Yunnan Province near Vietnamese border (Fig. 4). I could not find specimens of *P. japonica* and the other subspecies of *P. odorata* from the area, which suggests geographical isolation of the taxa. According to notes on labels of *P. odorata* subsp. *odorata* it is sometimes cultivated and used for condiments as done in Southeast Asia. Vernacular name 'Xiangliao (香蓼)' has been recorded on the label of IBSC 172177, that is currently used as the standard Chinese name for a different species, *P. viscosa* (Buch.-Ham. ex D. Don) H. Gross (Li 1998). In Yunnan Province, *P. odorata* subsp. *macrantha* has been collected from western and southern part, whereas subspecies *conspicua* has been collected only from eastern part, some of the latter show intermediacy with the former. In Eastern China both *P. japonica* and *P. odorata* subsp. *conspicua* are distributed together as in the case of Japan, where the latter prefers higher and cooler places at mountainside than the

former. In Hubei Province in Central China, I observed that *P. japonica* was a common weed at lakesides in Wuhan City situated in lowland, whereas *P. conspicua* was common on higher places at western part of the province, rarer in lowlands (Figs. 1, 2).

In the Ryukyu Archipelago, Hatusima (1971) reported only *Persicaria odorata* subsp. *conspicua* (*Polygonum conspicuum*) whereas Walker (1976) reported only *P. japonica*. Taiwanese floras (Liu et al. 1976, Kuo et al. 1993) recorded the two species, distinguishing them by hairiness of stems and achene characters. Indeed, *P. odorata* subsp. *conspicua* is much rare in these region, the most specimens determined as such are pinkish-flowered form of *P. japonica* as they has several flowers per node of inflorescences. Achene character of the Ryukyu plants described by Hatusima (1971) also matches well with *P. japonica* rather than *P. odorata*. Hairiness on stems is too variable even within population to be used as distinguishing character.

Hatusima (1971) reported the presence of an unique variant of *Persicaria odorata* subsp. *conspicua* as *Polygonum conspicuum* var. *lutchuense* Hatus. (nom. nud.) from Islands Kikai and Okinoerabu in the northern part of Ryukyu Archipelago. I have examined two specimens (Hatusima & Sako 21392, 21586, TI !) identifyable as the variant from Isl. Okinoerabu. These specimens are indistinguishable from *P. odorata* subsp. *conspicua* except complete absence of glandular dots on perianth. Hatusima (1971) noted the variants had wider less hairy leaves and shorter inflorescences than his *Polygonum conspicuum*, but these characters are only useful to distinguish from *P. japonica*, not from *P. odorata* subsp. *conspicua*. I regard them as a part of *P. odorata* subsp. *conspicua*, because the I have not examined them in the field, and material available at present is too limited for the formal recognition.

Steward (1930) described *Polygonum macranthum* Meisn. var. *scabridum* Steward as

an much strigose variety of his *P. macranthum* circumscribed by glandular-dotted perianth. Study of the isotype as well as the other Taiwanese specimens revealed that it is not belonging to *Persicaria odorata* but to *P. japonica*, and is regarded as the same taxon as *Polygonum omerostromum* Ohki (Fig. 5), which was erroneously reduced as a synonym of *P. barbatum* L. by Steward (1930) and the subsequent authors (Liu et al. 1976, Li 1998, Li et al. 2003). Although density and length of hairs on leaf blades and on ochreae so vary considerably within Taiwan that the variety has not been recognized in recent Taiwanese floras (Liu et al. 1976, Kuo et al. 1993), it can be recognizable as a locally restricted variety of *P. japonica*, i. e., var. *scabrida* (Steward) Yonek. Several specimens from Ryukyu Archipelago are identified as the variety, but further study on the variation of hair characters in the field, as the hair density seems considerably variable even within the same population. A few specimens from Pacific Ocean side of western Japan (Ibaragi 261007003 (TUS) from Tokushima Pref. and M. Yamanaka s.n. (TUS50709) from Kochi Pref.) approach the variety in having leaf blades uniformly strigose with minute hairs above, but are regarded as lying within variation range of typical variety, as length of hairs are shorter than the Taiwan and Ryukyu specimens of var. *scabrida*.

Distinctions among taxa recognized in the present study are summerized as the following key:

Key to the taxa of *Persicaria odorata* (including *P. macrantha* and *P. conspicua*) and *P. japonica*

1a. Flowers 4–6 per node of inflorescence; perianth white or rarely with reddish tinge in fruit, glandular or eglandular; styles 2 or 3; achenes lenticular or trigonous, lustrous
P. japonica

2a. Upper surface of leaf blades strigose only near margins, rarely uniformly strigose, hairs up to 0.5(–0.7) mm long; lower



Fig. 5. Lectotype of *Polygonum omerostromum* Ohki (= *Persicaria japonica* (Meisn.) Nakai ex Ohki var. *scabrida* (Steward) Yonek.) (S. Sasaki s. n. in Oct. 1922, TI, type no. 2932).

- surface strigose only along veins
 var. *japonica*
- 2b. Leaf blades strigose throughout on both surfaces, hairs on upper surface dense, 0.5–2 mm long var. *scabrida*
- 1b. Flowers 2 or 3 per node of inflorescence; perianth uniformly pale pink, rarely white, glandular (rarely eglandular?); styles usually 3, rarely some flowers with 2 styles; achenes usually compressed trigonous, reticulate-punctate, dull *P. odorata*
- 3a. Robust herbs; blade of middle leaves 12–20 × 1.8–4.5 cm, apex acuminate, base attenuate-cuneate; cilia of ochrea 2/3 to as long as ochrea; inflorescences erect, axis (including bracts) ca. 2 mm thick
 subsp. *macrantha*
- 3b. Medium-sized herbs; blade of middle leaves 6–18 × 1–3 cm, apex acute to acuminate, base cuneate or rounded-cuneate; cilia of ochrea 1/3–2/3 of ochrea in length; inflorescences usually nodding at apex except shorter lateral ones, axis (including bracts) ca. 1.5 mm thick
- 4a. Leaves with disagreeable odor; cilia ochrea usually less than 5 mm long, 1/3–1/2 of ochrea in length; inflorescences sparsely flowered, bracts eciliate or with sparse short cilia subsp. *odorata*
- 4b. Leaves odorless; cilia of ochrea 5–12 mm long, 1/2–2/3 of ochrea in length; inflorescence flowered with moderate density, bracts usually ciliate but not always so at apical part of inflorescence
 subsp. *conspicua*

Persicaria japonica (Meisn.) Nakai [Rep. Veg. Quelpaert: 41 (1914), comb. nud.] ex Ohki in Bot. Mag. (Tokyo) **40**: 51 (Feb. 1926); Nakai in Rigakkai **24**: 300 (Apr. 1926); Masam. in Sci. Rep. Kanazawa Univ. **2**: 80 (1954), cum auct. Makino; Kitag. in Satake et al., Wild Flow. Jap. Herb. Pl. **2**: 22 (1982), cum auct. H. Gross; W.

T. Lee, Lineam. Fl. Koreae **1**: 223 (1996), cum auct. H. Gross; Yonek. in K. Iwats. & al., Fl. Japan **2a**: 163 (2006) – *Polygonum japonicum* Meisn. in DC., Prodr. **14**: 112 (1856), in Ann. Mus. Bot. Lugduno-Batav. **2**: 59 (1865); Miq., Prol. Fl. Jap.: 299 (1867); Franch. & Sav., Enum. Pl. Jap. **1**: 396 (1875), pro parte; F. B. Forbes & Hemsl. in J. Linn. Soc., Bot. **26**: 341 (1891), pro parte; Matsum., Index Pl. Jap. 2(2): 58 (1912), pro parte; Steward in Contr. Gray Herb. **88**: 55 (1930); Ohwi, Fl. Jap.: 470 (1953), ed. Engl.: 410 (1965); Kitam. & Murata, Col. Ill. Herb. Pl. Jap. **2**: 309 (1961); E. Walker, Fl. Okinawa: 429 (1976); Ohwi & Kitag., New Fl. Jap.: 623 (1983); A. J. Li, Fl. Reipubl. Popularis Sin. **25**(1): 19 (1998), var. *japonicum*, pro parte, excl. fig.; A. J. Li et al., Fl. China **5**: 287 & 288 (var. *japonicum*) (2003), pro parte.

Type: JAPAN. Sine loco spec. (Zollinger, Pl. Jap. Exsicc. no. 205, G-DC–holotype, seen in microfische).

var. *japonica*.

? *Polygonum japonicum* Meisn. var. *grandiflorum* Meisn. in DC., Prodr. **14**: 695, in addenda (1856). Type: CHINA. Guangdong Prov., circa Canton (Park 149, G-DC–holotype, non vidi).

Polygonum martinii H. Lév. & Vaniot in H. Lév. in Bull. Acad. Int. Géogr. Bot. **11**: 340 (1902), pro parte. Syntype: CHINA. Guizhou Prov., environs de Tsin-tchen, Ganpin, etc. (L. Martin & E. Bodinier 1887, 14 Sep. 1897, E 00317987, photo vidi). The other syntypes seems to be *Persicaria odorata* subsp. *conspicua*.

Polygonum japonicum Meisn. var. *micranthum* Nakai in Bot. Mag. (Tokyo) **22**: (62), in clavi & (64) (1908) – *Polygonum sterile* Nakai in Bot. Mag. (Tokyo) **23**: (390) (1909) – *Persicaria sterilis* (Nakai) Nakai & Ohki in Ohki in Bot. Mag. (Tokyo) **40**: 51 (1926), excl. syn. *Polygonum donii* var. *firmum*; Nakai in Rigakkai **24**: 299 (1926); Miyabe & Kudô in J. Fac. Agric. Hokkaido Imp. Univ. **26**(4) [Fl. Hokkaido & Saghal. 4]: 525 (1934). Syntypes:

JAPAN. Okinawa Pref. (erroneously cited as 'Formosa'), Shuri (K. Miyake s.n., Sep. 1899, TI (type no. 2904 – **lectotype** !, designated here, photo in TUS); Wakayama Pref. (Prov. Kii), fauce Shikagase ([collector name is not written on the label] 22 Jul. 1883, TI (type no. 2901 – syntype !); Kochi Pref. (Prov. Tosa), Takaokagun, Sagawa-mura ([collector name is not written on the label], not dated, TI – syntype !); Miyazaki Pref. (Prov. Hyuga), Shonai ([collector name is not written in the label, but is presumed to be R. Yatabe & J. Matsumura], 5 Aug. 1882, TI (type no. 2903 – syntype !).

Polygonum japonicum Meisn. var. *micranthum* Nakai f. *brevistylum* Nakai in Bot. Mag. (Tokyo) **22**: (62), in clavi & (64) (1908), ex parte – *Polygonum sterile* Nakai var. *brevistylum* (Nakai) Nakai in Bot. Mag. (Tokyo) **23**: (391) (1909), ex parte. Syntypes: JAPAN. Fukushima Pref. (Prov. Iwashi), Aidzu [Yumoto] ([collector name is not written on label but is presumed to be J. Matsumura] s.n., 5 Aug. 1879, TI (type no. 2906 – **lectotype** !, designated here); Tokyo Pref. (Prov. Musashi), Tokyo [roadside near Koishikawa] ([collector name is not written on label but is presumed to be J. Matsumura], 18 Sep. 1880, TI (type no. 2907 – syntype !). The other syntype belongs to *Persicaria odorata* subsp. *macrantha*.

Polygonum japonicum Meisn. var. *salicifolium* Nakai in Bot. Mag. (Tokyo) **22**: (62), in clavi et (64) (1908), **23**: (390) (1909). Type: JAPAN. Yamaguchi Pref. (Prov. Suo), Yoshikigun, Ouchi-mura (J. Nikai 173, 12 Oct. 1902, TI (type no. 2908 – holotype !).

Polygonum japonicum Meisn. var. *glandulosum* Koidz. in Bot. Mag. (Tokyo) **29**: 314 (1915). Type: JAPAN. Okayama Pref. (Prov. Bittsiu), Kibigori, Sosha (Soja) (Z. Yoshino [394], [1 Nov. 1913] TI (type no. 2900 – holotype !; Z. Yoshino s.n., 1 Nov. 1913, TI – probable isotype !).

Polygonum pseudojaponicum Ohki in Bot. Mag. (Tokyo) **39**: 263 (1925), "*pseudo-japonicum*" – *Persicaria pseudojaponica* (Ohki)

Sasaki, List. Fl. Formosa: 169 (1928). Type: TAIWAN. Taipei City, Shirin (Y. Shimada [15], [13 Dec.] 1914, TI (type no. 2936 – syntype !); Hsinchu Co., Shinchiku (T. Kawakami & Y. Shimada [s.n.], [20 Dec.] 1909, TI (type no. 2935 – **lectotype** !, designated here); Sintiku, Kozan (Hsingshan in Hsinchu) (Y. Shimada [628B], [16 Nov.] 1924, TI (type no. 2937 – syntype !; Y. Shimada [628D], [16 Nov.] 1924, TI (type no. 2938 – syntype !).

Polygonum conspicuum auct. non (Nakai) Nakai: Hatus., Fl. Ryukyus: 254 (1971), pro parte.

Nomenclatural note: The combination *Persicaria japonica* has often been ascribed to H. Gross (in Bull. Acad. Int. Géogr. Bot. **23**: 30, 1913), but Gross never made such a combination there.

Although I have not seen the type material of *Polygonum japonicum* var. *grandiflorum* Meisn. collected from South China, all Japanese specimens of Siebold collection in L determined by Meisner as such belong to *Persicaria japonica*.

Nakai (1908) cited four collections as syntypes of *Polygonum japonicum* var. *micranthum* Nakai, and did three collections in the protologue of var. *micranthum* f. *brevistylum* Nakai. All syntypes of the former and two of three syntypes of the latter belong to *Persicaria japonica*, whereas a syntype of the latter is *P. odorata* subsp. *conspicua*. I designate the lectotype of the two taxa as above. Photographs of the syntypes are reproduced as plate 83 and plate 84 in Park et al. (2011), respectively.

Ohki (1925) cited three collections in the protologue of *Polygonum pseudojaponicum* Ohki, all of which well agree with the description. I designate a Kawakami and Shimada's specimen (the photograph was reproduced as the plate 105 in Park et al. 2011) as the lectotype of the *P. pseudojaponicum* because it is well preserved and bearing Ohki's annotation label.

Japanese name: Shirobana-sakura-tade シ

ロバナサクラタデ, *Shiobana-no-sakura-tade* (Nakai 1908).

Distribution: Japan (Hokkaido, Honshu, Shikoku, Kyushu and Ryukyu Islands), Korea, China (Shanghai City, Jiangsu, Zhejiang, Henan, Anhui, Jiangxi, Hubei, Hunan, Fujian? and Guangdong Provinces). Although I has not confirmed it may also occur in Shandong Province as Li et al. (2003) reported, as it grows in South Korean islands in the Yellow Sea near 38°N just east of Shandong Peninsula. A syntype of *Polygonum martinii* (Martin & Bodinier 1887, E 00317987) seems belonging to *Persicaria japonica* as far as I examined fine digital image of the syntype, but I tentatively exclude Guizhou Province from the distribution area as it is too remote from the main distribution area of the species and the other all specimens from Qingzhen (Tsin-tchen) area I have been examined belong to *P. odorata* subsp. *conspicua*.

Representative specimens examined (specimens from Japanese Mainlands are omitted; specimens of which I only saw the digital images downloaded from "Chinese Virtual Herbarium" (<http://www.cvh.org.cn/cms/en>) are denoted by an asterisk hereafter):

JAPAN: **Kagoshima** Pref. Isl. Amami-oshima, Kasarison, Matsubara (H. Ohba 8 & 16, 23 Oct. 1921, KYO); Isl. Okinoerabu, Wadamari-cho (H. Ohba 113, 29 Aug. 1924, KYO; T. Amano 6432, 14 May 1951, KYO); China-choo, Ohtsukan (M. Furuse 44822, 8 Dec. 1966, PE 1714199*). **Okinawa** Pref. Isl. Okinawa: Nakagami-gun, Misatoson, Nishihara (Y. Taira s.n., 5 Jul. 1936, KYO); Naha-shi, Kamiizumi-cho (T. Kanashiro 1366, 5 Nov. 1938, RYU 24308); in the trench along the road in the city of Naha (S. Hatusima 18059, 29 May 1955, TI); Shuri (Z. Tashiro s.n., 1 Jan. 1924, KYO; M. Ishihara 2091, 6 Jun. 1958, TNS 149320); Mawashi-shi, Handagawaku (E. Nakamine s.n., 9 Oct. 1954, TNS 115519, 115520); Chinen-son, Chinen-ukka (T. Yamashiro & M. Senaha 4781, 27 Jul. 1999, URO); Haebaru-son (S. Itoman 137, Jun. 1975, RYU 37279); Isl. Zamami (S. Hatusima 33416, 1 Jul. 1972, RYU-2436; T. Yamazaki 591, 13 Oct. 1972, TI); Isl. Tokashiki (Y. Miyagi & S. Hatusima 4796, 16–19 May 1974, RYU 22149).

TAIWAN: Taipei City. Sinsyo, Taihoku (Sasaki s.n., 23 Nov. 1926, TNS 683547). Ilan Co., Ilan City, near Chinchih police station, 121°45'06"E, 24°44'10"N, alt. ca. 140 m (J. J. Chen 509, 16 Nov. 2000, TUS 300233). Pingtung Co., Ako (E. Matuda 182, 4 Apr. 1915, TI).

KOREA: **Hwanghae**-do. Isl. Baengneong-do (T.

Nakai 12701, 25 Jul. 1929, TI); Isl. Daecheong-do (T. Nakai 12710, 26 Jul. 1929, TI); Monggeumpo (T. Nakai 12700, 24 Jul. 1929, TI). **Cheollanam**-do. Isl. Daeheuksando, Jin-ri (T. Ishidoya & T.-H. Chung 3459, 23 Aug. 1919, TI); Kurye (T. Nakai 554, 29 Jun. 1913, TI); Sinan-gun, Imja-do, near the north coast of Daegi-ri, 10 m alt. (H.-T. Im & students 49693, 29 Aug. 1997, TI). **Kangweon**-do. Tongcheon-gun, Gojeon (T. Nakai 6035, 1 Sep. 1916, TI). **Kyeongsangnam**-do. Chinju (H. Yokoyama 366, 24 Jun. 1939, TI). **Cheju**-do. Quelpaert in sepibus (T. Taquet 6199, Oct. 1913, TI).

CHINA: **Shanghai.** (P. Courtois 23998, 6 Nov. 1919, IBSC 114118); Ou-Si (P. Courtois 8083, 22 Sep. 1913, IBSC 142929); Cheling (Zhelin), prope Shanghai (H. Migo s.n., 3 Oct. 1933, IBSC 375123); Kunshan (K. Kimura s.n., 14 Oct. 1933, TI; H. Migo s.n., 8 Nov. 1933, PE 1864257*); Fengxiang Co., Xinsi (D. X. Ye 1535, in 1958, IBSC 326170). **Jiangsu.** Kunshan City (H. Migo s.n., 3 Nov. 1933, IBSC 375116); Yixing City, near Zhuling (W. Z. Fang & al. 245, 25 Aug. 1978, PE 811298*); Changshu City, Zhitang (H. X. Zhou 3274, 20 Aug. 1958, IBSC 325387); Wuxi City, Huishan (Y. R. Huang s.n., not dated, TI); Nanhuai Co., SW of Nanhuai (D. X. Ye 1575, 17 Aug. 1958, IBSC 326177); Juron Co., Maoshan (M. B. Deng & al. 3477, 9 Oct. 1956, PE 623803*); Nanjing City, Zhongshan Botanical Garden (collector unknown 0872, 14 Aug. 1975, PE 1647530*); Zijinshan (F. X. Liu 1079, 10 Aug. 1951, IBSC-263108). **Zhejiang.** Linhai (H. Migo s.n., 5 Nov. 1935, IBSC-375130); Hangzhou City, Jiantang-men (K. Honda 702, Sep. 1909, TI; K. Honda 411, Oct. 1909, TI); Putuo Co., Isl. Putuo (Puto) (H. Migo s.n., 14 Oct. 1935, NAS 00169381*). **Henan.** Xinyang City, Jigongshan, nursery in forest farm, alt. 200 m (A. J. Li & al. 110, 7 Oct. 1966, PE 933054*); Shangcheng Co., Diaoyutai (Puchadui 29173, Jul. 1959, PE 92033*); Tongbai Co., Mt. Funiu-shan, N. of Wucheng (Henan Forestry Bureau 267, 9 Aug. 1956, PE 423176*). **Anhui.** Anqing (Anching) (F. Maekawa 0B013, 20 Jan. 1940, TI); Guichi City, Meikai Commune, 200 m (collector unknown Gui-7003, 1 Jul. 1959, PE 1003711*); Quanjiao Co., Machang (E China Experimental Sta. 3608, 14 Sep. 1951, PE 246262*). **Jiangxi.** Yongfeng Co., Guxian Commune, along road to Guxian-linshan (X. X. Yang 831016, 19 Oct. 1983, IBSC 517942); Jiujiang Co., Mingshan, alt. 100 m (C.M. Tan 95729, 19 Sep. 1995, TUS 196210); Yangjia-qiao, alt. 28 m (C.M. Tan 95503, 1 Aug. 1995, TUS 194209). **Hubei.** Wuhan City, Wuchang, Moshan (Y. Z. Long 274, 27 Aug. 1980, TI). **Hunan.** Yizhang Co., Renli-xiang, Dahuangjiacun, alt. 340 m (P. H. Liang 83353, 11 Sep. 1942, IBSC 168200); Changle-xiang, boundary with Guangdong Prov. (S. K. Lau 29614, 20 Jul. 1941, IBSC 145782). **Guangdong.** E of Ruyuan (S. K. Lau 29614, 20 Jul. 1941, IBSC 145782); Lechangping, Shitangkou, 170 m alt. (S. H. Chun 2139, 18 Aug. 1942, IBSC 168268); Canton, Poan Tong (A. To 1895, 6 Dec. 1977, PNH 90108).

var. *scabrida* (Steward) Yonek., comb. nov.

Polygonum macranthum Meisn. var. *scabridum* Steward in Contr. Gray Herb. **88**: 52, t. 2 (1930).

Type: TAIWAN. Taipei City, Hokuto (Peitou) (U. Faurie 766, [Dec. 1913] PNH—holotype, not seen but probably extant, see note below; KYO—isotype !, 4 sheets).

Polygonum omerostromum Ohki in Bot. Mag. (Tokyo) **39**: 262 (1925) — *Persicaria omerostroma* (Ohki) Sasaki, List. Fl. Formosa: 169 (1928), syn. nov. Type: TAIWAN. Taipei City, Shirin (Shihlin) near Taihoku (S. Sasaki s. n., [Oct.] 1922, TI (type no. 2932—lectotype !, designated here, Fig. 5; TNS 683548—isolectotype !); Hsinchu Co., Shinchiku (Hsinchu) (T. Makino [s.n.], [24 Nov.] 1896, TI (type no. 2931—syntype !; T. Makino 136, 24 Nov. 1896, KYO—probable isosyntype !).

Polygonum conspicuum auct. non (Nakai) Nakai: Hatus., Fl. Ryukyus: 254 (1971), pro parte; T. S. Liu & al., Fl. Taiwan **2**: 267 (1976), pro parte; C. F. Kuo & al., Fl. Taiwan ed. 2, 2: 298 (1996).

Japanese name: Ke-sakura-tade ケサクラタデ (Ohki 1925), Ke-tade (Ohki 1925)

Distribution: Japan (Ryukyu Islands) and Taiwan.

Nomenclatural note: I found East Asian specimens of *Polygonaceae* studied by Steward (1930) which had been preserved in the herbarium of the Bureau of Science, Manila were fortunately escaped from destruction of the institute during the World War II and were extant in PNH when I visited there in 1998. Although I could not examine type materials stored separately from general collections during my short visit, I believe the holotype of *Polygonum macranthum* var. *scabridum* Steward is intact in PNH.

Ohki (1925) cited two specimens in the protologue of *P. omerostromum*. Both agrees well with majority of the description, but Makino's specimen bears a note 'nut 3-gonous' on the sheet, the character state disagrees with

the original description of style ('Styli sursum 2-fidi). Therefore, a Sasaki's specimen is designated as the lectotype. Photograph of the lectotype is reproduced as plate 100 of Park et al. (2011).

Specimens examined:

JAPAN: Kagoshima Pref. Isl. Amami-oshima, Kasarimura (S. Sako 67, 13 Nov. 1956, TI); Isl. Kikai-jima (K. Yoshinaga 661, 12 Aug. 1975, RYU 37005). **Okinawa** Pref. Isl. Okinawa, Shuri (Y. Miyagi 3658, 1966, RYU 16295).

TAIWAN: Taipei City (T. Makino 133, 13 Nov. 1896, TI); Shirin (Shihlin) (T. Tanaka & Y. Shimada 13449, 22 Oct. 1932, IBSC 54073, KYO, TI). **Hsinchu** Co. Hsin-chu (Shinchiku) (T. Makino 136, 24 Nov. 1896, TI).

Persicaria odorata (Lour.) Soják in Preslia **46**: 154 (1974).

Polygonum odoratum Lour., Fl. Cochinch.: 243 (1790); Meisn. in DC., Prodr. **14**: 106 (1856); Courchet in Lecomte, Fl. Gen. Indo-Chiné **5**: 29 (1910); Steward in Contr. Gray Herb. **88**: 62 (1930); Merr. in Trans. Amer. Philos. Soc. n. s. **24**(2): 44 (1935). Type citation: 'Colitur in toto Regio Cochinchinae: amat loco humida'. Type material was not located in BM (Merrill 1935).

subsp. *odorata* [Fig. 3]

Polygonum macranthum auct. non Meisn.; Merr. in J. Arnold Arbor. **23**: 161 (1942).

Polygonum japonicum auct. non Meisn.: A. J. Li, Fl. Reipubl. Popularis Sin. **25**(1): 19 (1998), pro parte; A. J. Li & al., Fl. China **5**: 287 (2003) pro parte.

Distribution: South China (Guangdong and Yunnan Provinces and Guangxi Autonomous Region), Vietnam, Laos, Cambodia, Thailand, Myanmar, Malaysia and Indonesia (cultivated only?). Often cultivated as condiment. New to China.

Specimens examined:

CHINA: Guangdong. Fengkai Co., Heishiding, in sunny valley (B. H. Liang 949, 5 Nov. 1986, IBSC 527189). Guangxi. Pingnan Co., Zhongzhu-xiang, Pinglin-cun, Jiaowei, cultivated in the field (Z. S. Chung 84913, 21 Nov. 1937, IBSC 172177); Gui Co., near Dayu (S. Q. Zhong 21131, 11 Oct. 1958, IBK 00019914*). Yunnan. Marlipo Co., Hwang-jin-in, 1100–1400 m (K. M. Feng 13270, 13 Nov. 1947, KUN 282329*); Lüchun Co., Mt. Huanglianshan, Ma-yu, 840–1300 m (S. K. Wu & al. 356,

29 Oct. 1995, TI); Mengla Co. (Jenn-yeh Hsien), Menglung, 750 m, cultivated by native T'ai, common vegetable (C. W. Wang 78931, 10 Nov. 1996, KUN 282320*).

VIETNAM: Tonkin, Province du Sontoy, Mt. Bavi, alt. 700 m ([collector name is not written on the label but is presumed as Petelot, as the specimen is considered as a duplicate of the voucher cited in Merrill (1942)] 6601, 1 Nov. 1940, TI).

THAILAND: **Eastern.** Nakhon Ratchasima Distr., Sakaerat, 14°40'N, 102°2'E, 400 m, cultivated (C. F. van Beusekom et al. 3306, 23 Oct. 1971, KYO); Ban Keng, cult. as a pot herb, ca. 25 m (A. F. G. Kerr 19858, 11 Nov. 1930, KYO, L-112393; Sangka (Siam) - Sam Sawng (Cambodia Boundary), alt. ca. 300 m (A. F. G. Kerr 8299, 15 Jan. 1924, L 112318). **Northeastern.** Prov. Loei, Wang Kwang Waterfall via Penpob Mai Waterfall to Tam Yai Waterfall, Phu Kradung National Park, Phu Kradung Distr., 1190-1250 m (T. Shimizu & al. T-23063, 16 Nov. 1979, KYO). **Peninsular.** Prov. Ranong, Khao Pawta Luangkaeo, Kaper Distr., 940-980 m (T. Shimizu & al. T-26576bis, 9 Dec. 1979, KYO).

subsp. *macrantha* (Meisn.) Yonek., comb. nov.

Polygonum macranthum Meisn. in DC., Prodr. **14**: 107 (1856); Steward in Contr. Gray Herb. **88**: 51 (1930), excl. syn. – *Persicaria macrantha* (Meisn.) Haraldson in Symb. Bot. Upsal. **22**(2): 74 (1978).

Type: **INDIA.** Meghalaya, in paludosis jugi Khasyani (Wallich, K?; Griffith, K, non vidi).

Distribution: India (only Meghalaya and Nagaland specimens have been seen but may be distributed in hillside throughout Northeastern India), northern Myanmar and Southwest China (western and southern part of Yunnan Province and southeastern part of Xizang Autonomous Region).

Specimens examined:

CHINA: **Yunnan.** Yangbi Co. (T. N. Liou 22832, 12 Nov. 1946, IBSC 217665); Yangbi Co., Dongnanshan (R. C. Ching 75190, 24 Oct. 1940, KUN 282330*); Dali Co. (T. N. Liou 20960, 2 Oct. 1946, IBSC 215987); Menghwa, near Wuliangshan, alt. 1900 m (Y. Tsiang 12144, 27 Sep. 1933, IBSC 73244); Jingdong (Ching-tung) Co., Ching-tsai-tang, alt. 1750 m (M. K. Li 845, 26 Oct. 1939, IBSC 555434); Tengchong Co., hills to NW of Tengyueh (G. Forrest 8789, in 1912, IBSC 35728); Jietou Xiang, Shitou Cun, 25°21'02"N, 98°37'19"E, 1530 m, growing in rice paddies (H. Li 11246, 29 Oct. 1998, MBK 0019197); Mingkwong Valley (G. Forrest 8871, in 1912, IBSC 35727). **Xizang.**

Mêdog Co., near Dairkou, 1750 m (Qingzang Exped. 74-4402, 20 Aug. 1974, KUN 282284*); Buqiong Lake, 1400 m (H. Sun et al. 1232, 11 Nov. 1992, KUN 615984*).

MYANMAR: **Kachin** State. North Triangle (Hkinlum), 4000 ft. (F. Kingdon-Ward 21248, 11 Aug. 1953, TI).

INDIA: **Nagaland.** Takubama, Naga Hills, ca. 7000 ft. (T. R. Chand 3522, 30 Aug. 1950, L 972.049-408). **Meghalaya.** Mont. Khasia, Regio Trop., 0-6000 ped. (J. D. Hooker & T. Thomson Polygonum no. 21, not dated, L 908.174-1476, 908.174-276).

subsp. *conspicua* (Nakai) Yonek., comb. nov. [Figs. 2, 6]

Polygonum japonicum Meisn. var. *conspicuum* Nakai in Bot. Mag. (Tokyo) **22**: (61) in clavi et (63) (1908); Makino, Ill. Fl. Nippon: 618, f. 1852 (1940); A. J. Li, Fl. Reipubl. Popularis Sin. **25**(1): 19 (1998); A. J. Li & al., Fl. China **5**: 288 (2003) – *Polygonum conspicuum* (Nakai) Nakai in Bot. Mag. (Tokyo) **23**: (389) (1909), in J. Coll. Sci. Imp. Univ. Tokyo **31**(1) [Fl. Kor. 2]: 168 (1911); Ohwi, Fl. Jap.: 470 (1953), ed. Engl.: 410 (1965); Kitam. & Murata, Col. Ill. Herb. Pl. Jap. **2**: 308 (1961); Hatus., Fl. Ryukyus: 254 (1971); T. S. Liu & al., Fl. Taiwan **2**: 267 (1976); Ohwi & Kitag., New Fl. Jap.: 624 (1983) – *Persicaria conspicua* (Nakai) Nakai [in T. Mori, Enum. Pl. Cor.: 131 (1922), comb. nud., "*conspicuum*"] in Bot. Mag. (Tokyo) **40**: 51 (1926); Masam., Fl. Geob. Yakusima: 174 (1934), in Sci. Rep. Kanazawa Univ. **2**(2): 79 (1954); Nemoto, Fl. Jap. Suppl.: 170 (1936); Kitag. in Satake & al., Wild Flow. Jap. Herb. Pl. **2**: 22 (1982); W. T. Lee, Lineam. Fl. Koreae **1**: 219 (1996); Yonek. & H. Ohashi in J. Jpn. Bot. **72**: 303 (1997) – *Persicaria macrantha* (Meisn.) Haraldson subsp. *conspicua* (Nakai) Yonek. in K. Iwats. & al., Fl. Japan **2a**: 164, in adnot. (2006).

Type: **JAPAN.** Chiba Pref. (Prov. Shimousa), Ichikawa-shi, Mama ([collector name is not written on the label, but is presumed to be J. Matsumura], 30 Sep. 1885 [erroneously cited as 'Sept. 3, 1885' in the protologue], TI (type nos. 2894, 2895–syntypes !); Tokyo Pref. (Prov. Musashi), colle Dokwanyama in Tabata ([collector name is not written on the label, but is



Fig. 6. Lectotype of *Polygonum japonicum* Meisn. var. *conspicuum* Nakai (= *Persicaria odorata* (Lour.) Soják subsp. *conspicua* (Nakai) Yonek.) (J. Nikai 176, 12 Nov. 1892, TI, type no. 2898).

presumed to be R. Yatabe or J. Matsumura] [13 Oct. 1878], TI (type no. 3128–syntypes !); Osaka Pref., Prov. Kawachi (T. Tada s.n., Oct. 1899, TI (type nos. 2896, 2897–syntypes !); Yamaguchi (Prov. Suo), Yoshikigun, Miyanomura (J. Nikai [176], 12 Nov. 1892 (erroneously cited as 'Sept. 12, 1802' in the protologue), TI (type no. 2898–**lectotype** !, designated here; Fig. 6); *ibid.*, Ouchimura, Hikami (T. Nakai, 10 Oct. 1900, TI–syntype, non vidi); **KOREA**. [Kyeongsangnam-do, Yangsan City] Mul-geum (T. Uchiyama s.n., 11 Oct. 1902, TI–syntype !).

Polygonum martinii H. Lév. & Vaniot in H. Lév. in Bull. Acad. Int. Géogr. Bot. **11**: 340 (1902), pro parte. Syntype: **CHINA**. Guizhou, environs de Hoang-Ko-chou, Bords des fossés (Y. Léquin (herb. E. Bodinier) 2496 (1887), 8 Oct. 1898, E 00317989–photo seen).

Polygonum japonicum Meisn. var. *micranthum* Nakai f. *brevistylum* Nakai in Bot. Mag. (Tokyo) **22**: (62), in clavi & (64) (1908), pro parte. – *Polygonum sterile* Nakai var. *brevistylum* (Nakai) Nakai in Bot. Mag. (Tokyo) **23**: (391) (1909), pro parte. Syntype: **JAPAN**: Hokkaido (Yezo), Oshima Division, Hakodate (J. Matsumura s.n., 15 Aug. 1899, TI, type no. 2905 !). The other two syntypes belong to *Persicaria japonica*.

Polygonum japonicum Meisn. var. *macranthum* Makino in Iinuma, Somoku-Zusetsu ed. 3 (rev. Makino), **2**: 579, t. (7) 68 (1910) – *Persicaria conspicua* (Nakai) Nakai f. *macrantha* (Makino) Hiyama in J. Jpn. Bot. **37**: 29 (1962). Holotype: pl. (7) 68 of Iinuma (1910).

Polygonum japonicum auct. non Meisn.: Sam. in Hand.-Mazz., Symb. Sin. **7**: 129 (1929); Lauener & Ferguson in Not. Roy. Bot. Gard. Edinb. **40**: 198 (1982), quoad syn.; A. J. Li, Fl. Reipubl. Popularis Sin. **25**(1): 19, t. 4, f. 1–3 (1998), pro parte; A. J. Li & al., Fl. China **5**: 287 (2003) pro parte.

Nomenclatural note: Nakai (1908) cited five collections from Japan and one collection from South Korea as syntypes in the protologue of *Polygonum japonicum* var. *conspicuum* Nakai.

I could locate all specimens except Nakai's one in TI. Among the syntypes examined I designated a specimen Nikai 176 (TI; Fig. 6) as the lectotype because it is the only specimen accompanied by underground part mentioned in Nakai (1908)'s note (p. (59)) as 'vigorously propagated by the rhizome'. Moreover, the description of perianth 'Calyx 5–6 m.m. longus' by Nakai (1908) fits better in with the Nikai's specimen than the other syntypes which has a little smaller perianth about 5 mm long.

Among three syntypes of *Polygonum martinii* H. Lév. (1902), a specimen cited above clearly belongs to *Persicaria odorata* subsp. *conspicua*. Another specimen (Guizhou, environs de Kouy Yang (Bodinier 1773, 9 Aug. 1897, E 317988)) may belong to the taxon as far as I examined the digital image of the syntype.

Distribution: Japan (Hokkaido, Honshu, Shikoku, Kyushu and Amami Islands), South Korea (Gyeongsangnam-do), China (widely distributed in provinces south from Yangzhe Valley but absent in Guangdong and Hainan Provinces) and Taiwan? No specimens from Taiwan have been seen.

Representative specimens outside Mainland Japan examined:

JAPAN: Kagoshima Pref. Isl. Okinoerabu, near Amata, alt. 20 m (S. Hatusima & S. Sako 21392, 16 Mar. 1958, TI); near the seashore at Tina (S. Hatusima & S. Sako 21586, 19 Mar. 1958, TI).

CHINA: **Shaanxi**. Ningqiang Co., Daan (Y. L. Qiao 256, 2 Oct. 1958, PE 1018677*); Mian Co., Changbazi 800 m (K. T. Fu 6128, 2 Oct. 1952, PE 271522*); Xixiang Co. (Sihsiang-hsien), 550 m (H. W. Kung 3415, 14 Aug. 1933, PE 1864233*); Yang Co. (H. W. Kung 3637, 14 Sep. 1933, PE 46840*). **Henan**. Shangcheng Co., Jingangtai Forest Farm (Plant Resource Exped. D1575, 19 Sep. 1985, PE 1794293*). **Jiangsu**. (township illegible), Tanmai (S. J. Liu & al. 166, 21 Oct. 1963, IBSC 373152). **Zhejiang**. Mt. Tianmushan, Dayou-cun (H. Q. Zhu 333, 11 Sep. 1956, IBSC 330144); Hangzhou City, Genshanmen (K. Honda 127, Aug. 1909, TI); Changhua, below Jiaozhangshan (X. Y. He 26632, not dated, IBSC 328651); Hanzhou City, Hupao (collector unknown 1360, 9 Oct. 1958, KUN 615985*). **Anhui**. Chaohu City, Chaocheng, Dongan (E China Experimental Sta. 3909, 21 Sep. 1951, PE 246202*); Shucheng Co., Gouerkou, Luqishan (E China Experimental Sta. 4544, 1 Oct. 1951, PE 246261*); Yuexi

Co., alt. 400 m (E China Experimental Sta. 6946, 2 Oct. 1953, PE 376427*); Qingyang Co., Jiuhuashan, 600 m (W. T. Wang s.n., 17 Sep. 1987, PE 1382167*); Qimen Co., [... illegible] alt. 200 m (M. B. Deng 5003, 14 Oct. 1959, PE 625152*). **Jiangxi**, Nanchuan, 4th road, Pengjiaqiao (X. X. Yang 10929, 29 Sep. 1950, IBSC 241530); Suichuan Co., Dafen Distr., Linyangxiong-shan, 900 m (J. S. Yue & al. 4395, 29 Sep. 1963, KUN 282291*). **Hubei**, Xingshan Co., Daxiakou, 160 m (T. P. Wang 12015, 23 Sep. 1939, PE 1864301*); Laifeng Co., 700 m (H. G. Li 7464, in 1958, IBSC-380201). **Hunan**, Sinning Co., Ma-Ling-Tung, alt. 650 m (C. S. Fan & Y. Y. Li 537, 23 Sep. 1935, L 939.270-184); Wugang Co., a valley W of Yunshantang, 1000 m (L. H. Liu 16001, 26 Sep. 1963, KUN 282306*); Xiangxi, Baojing Co., Xiapeng, alt. 500 m, fl. pink (L. K. Liu 9765, 12 Sep. 1958, IBSC 324906); Yuanliang Co., Changjie Commune, Wangjiaya, alt. 250 m (L. K. Liu 08362, 29 Sep. 1977, IBSC 436244). **Guangdong**: Lechang Co., Jiufeng (Z. Huang 21344, 14 Nov. 1931, KUN 282279*). **Guangxi**, Sine loco spec. (R. C. Ching 8365, 3 Nov. 1928, IBSC 43678); Xing'an Co., beside rice paddy (S. F. Chiu H80, 22 Oct. 1940, IBSC 145516); Nandan, Mangchang, Jiazha, 2500 m (Z. Huang 41091, 11 Jun. 1937, IBK 00019915*). **Chongqing**, Nanchuan-qu, Mihe, Yaowan, 480 m (G. F. Li 64404, 30 Oct. 1957, KUN 282275*). **Sichuan**, Sine loco spec. (X. L. Sun 5211 (S. I. W. C. Szechuan Exped.), IBSC 430040); Chengdu (Chengtu), outside South Gate (F. P. Fang 13148, 4 Nov. 1938, TI); Chengdu?, Xinglong-qu, Mayikou, alt. 1300 m (H. F. Zhou 110950, 17 Sep. 1964, IBSC 567445); Omei-hsien, Mt. Omei (C. L. Chow 6463, Jul. 1942, TI); Dujiangyan City (Guan Xian), Qisuping, alt. 1300 m (Z. T. Wang & al. 870225, 29 Jul. 1987, TI); Qinglongzui near the side of Longwangmiao, along the Longxi River, alt. 1750 m (D. E. Boufford & B. Bartholomew 24625, 5 Sep. 1988, TI); Huidong Co., Lianhe-xiang, Xiaofen-he, 1900 m (S. G. Wu 1176, 10 Nov. 1996, KUN 282273*). **Guizhou**, Meitan Co., Yonghe Commune, Shuangshan, 830 m (N. Guizhou Exped. 12529, 8 Sep. 1959, KUN 282300*); Nakan, Chengfeng, in ravine (Y. Tsiang 4514, 15 Oct. 1930, IBSC 37563); Fan Ching Shan, Ta Ho Yen, alt. 900 m (A. N. Steward et al. 383, 7 Sep. 1931, L 933.332-44); Songtao Xian, vicinity of Lengjiaba in the vicinity of the confluence of the Xiaohu and Dahe rivers, NE side of the Fanjing Shan mountain range, alt. 820–1120 m (B. Bartholomew & al. Sino-American Guizhou Botanical Expedition 1869, 5–9 Oct. 1986, TI); Tsingchen (Qingzhen), vicinity of city (S. W. Teng 1115, 16 Sep. 1935, IBSC 115877); Qingzhen, Lijiazhuang (S. W. Teng 90600, 23 Jul. 1936, IBSC 113272). **Yunnan**, Sine loco spec. (E. E. Maire 772/1913, in 1913, IBSC 51593); Yanjin Co., Liangwan-qu, Chengfeng Commune, Mt. Chengfeng-shan, 1090 m (NE Yunnan Exped. 1150, 19 Sep. 1964, KUN 282323*); Qujing? (S. F. Chiu H65, 5 Oct. 1940, IBSC-145511); Dali Co., Dali (H. C. Wang 2939, 15 Sep. 1942, IBSC 218790,

KUN 282326*); Jingdong Co., Chengguan, 1130 m (H. Peng 1670, 29 Oct. 1993, KUN 282331*).

Note: Specimens from Dujiangyan City in Western Sichuan (Wang & al. 870225; Boufford & Bartholomew 24625) have robust habit similar to the subsp. *macrantha*, but I consider them as lying within variation range of subsp. *conspicua* because they have short cilia similar to the latter. Maire's specimen (IBSC 51593) from Yunnan Province has habit of subsp. *conspicua* except the shorter cilia less than 1/3 of the ochrea in length approaching toward subsp. *odorata*.

This taxon usually has pinkish flowers, but the plants with white flowers are sporadically found throughout the distribution range (Hiyama 1962). If such plants are recognized as a form, the names of the form and the normal pink-flowered form are as follows:

Normal form: *Persicaria odorata* (Lour.) Soják subsp. *conspicua* (Nakai) Yonek. f. **conspicua** (Nakai) Yonek., comb. nov. For the basionym see above.

White-flowered form: f. **albiflora** (Hiyama) Yonek., comb. nov.

Persicaria conspicua (Nakai) Nakai ex Ohki f. *albiflora* Hiyama in J. Jpn. Bot. **37**: 29 (1962). **Type**: JAPAN. Tokyo Pref. (Prov. Musashi), Setagaya-ku, Futago (T. Makino s.n., 4 Oct. 1936, MAK-13318 (photo seen) -Holotype).

Japanese name: Shirobana-hana-sakura-tade (Sugimoto 1965). シロバナハナサクラタデ

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米倉浩司：日本とその周辺のタデ科植物に関する新発見 (II)

前報（植物研究雑誌 82(1): 1-19, 2007）に引き続き、2006年に *Flora of Japan* で発表した日本産タデ科植物の分類に関する新見解に関する補足と訂正を行う。今回はイヌタデ属 *Persicaria* のサクラタデとその近縁種に関する問題を取り上げる。

サクラタデとその近縁種は、日本産のものは中井 (1908) 以来様々に分類されてきたが、概ねサクラタデとシロバナサクラタデの2種を認めるのが一般的である。しかし、これらの間の区別点については定説がなく、従来用いられてきた花の色や花被片の腺点の有無、花柱の数などはいずれも決定的なものではないため、海外では Samuelsson (1929) など両者を区別しない極論もある。また、沖縄では、初島 (1971) はサクラタデのみを認めるのに対し、Walker (1976) はシロバナサクラタデのみを認めるなど、主要文献の間でも不一致が見られる。

筆者の考えでは、最も有効な区別点は花序の節当りの花数にあり、2または3個ならばサクラタデ、4個以上であればシロバナサクラタデと同定できる。若い花序では蕾が重なっているため外からは見にくい、花の落ちた後の花序でも小花柄は残っているために同定は容易である。この形質にもまれに中間的なものが出てくるが、そうした個体は花序の花の咲き方にやや異常な点が見られる。一方、従来用いられてきた形質のうち、瘦果の光沢の有無は有効であるが、自花不和合性で結実率が低いためにあまり使えない。他の形質については、特にシロバナサクラタデにおいて変異が大きく、あまり有効ではない。中間型は多くは結実しないが、わずかに結実するものを1標本だけ確認しており、その瘦果は中間的な形質を示すため、両者の雑種である可能性がある。Yonekura (2006) はこうした特徴に基づいて従来通りこの仲間に2種を認め、シロバナサクラタデは従来通り *Persicaria japonica* (Meisn.) Nakai ex Ohki を用いる一方、サクラタデの学名については Steward (1930) に従ってインド東北部から記載された *P. macrantha* (Meisn.) Haraldson を当て、若干の形質の違いが見られることからその亜種として扱った。

しかし、その後オランダ国立標本館ライデン分館 (L) の標本を調べた結果、筆者が *Persicaria macrantha* の基本型と思った東南アジア産の植物は、ベトナムからよ

り古く発表された *P. odorata* (Lour.) Soják であり、真の *P. macrantha* はインド東北部からミャンマー北部を経て中国雲南省にかけて分布する全く別の型であることがわかった。一方、日本産のサクラタデと区別できない型は中国の長江流域、特に南岸一帯に広く分布し、西は四川、雲南両省東部まで達しており、中国大陸においてこれら3者が概ねすみわけていることが推測された。これら各型の間には、小頻度ながら中間型が見られるので、これら全てを *P. odorata* (Lour.) Soják の下に一括し、それぞれを亜種として扱うのが妥当であると結論した。

Persicaria odorata subsp. *odorata* は Vietnamese Coriander の名で東南アジアではハーブとしてしばしば栽培される植物であるにもかかわらず、東アジアの研究者は正しく認識しておらず、中国植物誌でも異名としてすら出てこないが、中国の広西チワン族自治区や隣接する広東省西部、ベトナム国境に近い雲南省南東部には同じものが分布し、香蓼の名で栽培されることもある。中国の植物誌ではこれらの植物は全てシロバナサクラタデと区別されていないが、筆者が調べた限りではシロバナサクラタデは中国東部～中部および東南部の低標高地に限って分布し、それ以外の産地のものは *P. odorata* の諸型を誤同定したものと考えられる。サクラタデはシロバナサクラタデの分布域内にも見られ、日本と同様にしばしば同所的に生育するが、どちらかと言えばより高い標高の場所を好む傾向が見られる。

南西諸島産のこの仲間は、初島 (1971) がリュウキュウサクラタデと仮称した型以外のものは全てシロバナサクラタデと同定できる。この地域から台湾にかけてのシロバナサクラタデには毛の密度に変異が大きく、特に毛深いものは独立種 *Polygonum omerostromum* Ohki とされたり、サクラタデの変種とされたりしているが、近年の植物誌では認められていない。しかし、葉の両面に剛毛を密生するような型はこの地域にしかないもので、この型に限ってシロバナサクラタデの変種として扱っておきたい。和名には、*P. omerostromum* に対してつけられたケサクラタデを使うのがよいであろう。初島 (1971) のリュウキュウサクラタデは全体の特徴ではサクラタデと区別できず、ただ花被に腺点が無いことで異なるに過ぎない。現時点では調べた標本が少ないので、サクラタデに含めて扱っておきたい。今後現地調査を行って分類学的実体を確かめる必要がある。

(東北大学植物園)